

Hobbies

WEEKLY

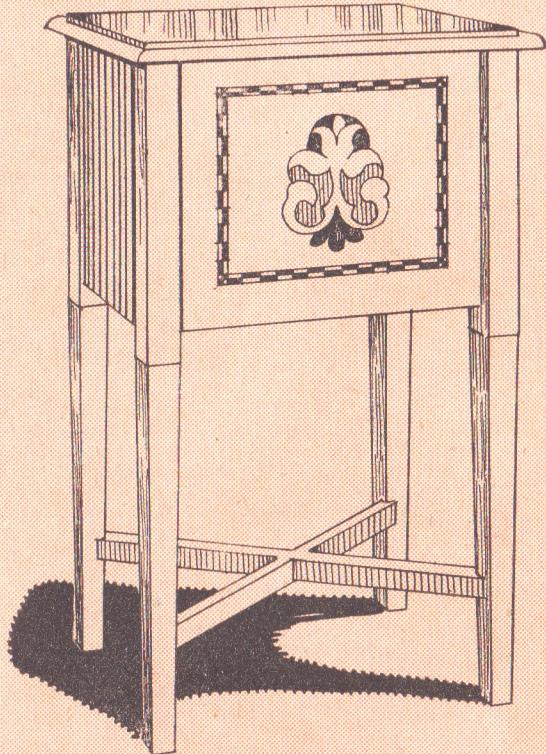
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OUR illustration on this page shows a useful work table. At a glance it can be seen that the decoration is simple and not over elaborate. It consists of either a simple fretted overlay in some thin wood, or an inlaid panel in three varieties of wood.

Any of the better class woods may be used for the cabinet; oak, walnut or mahogany being our choice. Oak and mahogany are now fairly plentiful and can be obtained in suitable panels. Walnut, on the other hand, is almost impossible to get, but small thin stuff suitable for cutting up for inlay work might be obtainable from some timber buyers.

13½ins. square by ½in. thick; two cross stretcher rails, each 18ins. long by 1½ins. deep, by ½in. thick; and some thinner wood for making the interior compartment.

The Legs

As will be noted, the legs are 27ins. long when finished, but an extra ½in. or so should be added to this to allow for trimming off at the top, and should be planed away after tenoning in the panels. The taper of the lower 15ins. of the legs should be as shown in Fig. 2, gradually decreasing from 1½ins. to ½in. at the feet.

The panels forming the box are let into the legs for a distance of ½in., and

Make this handsome

WORK TABLE CABINET

The overall dimensions of the table are: height 27½ins. by 16ins. square on top. By reference to the diagrams, Figs 1 and 2 and the constructional details Figs. 3 and 4, the amateur cabinet maker should experience no difficulty in reproducing the design.

The parts required are: four legs each 27ins. long by 1½ins. or ½in. square; four panels for the sides of the cabinet 13ins. wide, by 11ins. deep by ½in. thick; one top, overall 16ins. square; one floor,

the grooves made in the latter must be set out as shown in the enlarged section in Fig. 2. Groove the legs cleanly and accurately so as to get a sound fit when the panels are knocked together.

If desired, instead of grooving in the panels, they may be tenoned into the legs, two tenons being made on the end of each panel. Along the bottom inside edge of each panel glue and pin a bearer fillet (F in the enlarged detail in Fig. 1) for the floor. These fillets should be about ½in. square and may be of softer wood than the rest.

The floor can be in two or even three widths to make up as required, and the corners must be checked to fit neatly round the legs inside.

Interior Compartment

The interior box compartment can be made from ½in. thick wood, and measurement should be made direct from the made-up box in setting out the two parts required. First glue and pin a ½in. square fillet to one side of the box at a distance of 4ins. down from the top of the leg. Then cut a piece of ½in. wood for the floor. This should be 4ins. wide, and, like the main floor, it should be checked at the back edge to fit round the legs at each end. Glue and pin this piece in place, and, if necessary for bearing strength, add ½in. square fillets under each end before the front of the compartment is set in place.

For this front we shall need a piece of similar length wood to the floor, and 4½ins. in width. Round off the lower

edge of the piece and make it smooth, so that fingers and hands are not injured when material is being taken from the box. Nail and glue the front to the floor so that its top edge lies flush with the sides of the box. Then take off the sharp edges of the box sides and also those of the front of the interior box.

Cross Stretcher

Next prepare the cross stretcher rails for the lower part of the legs. Turn the whole article upside down, and measure down the legs 4ins.—that is, the height the rails will be off the floor.

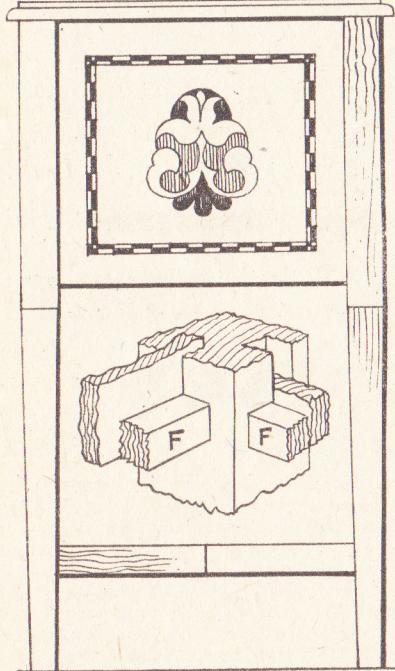


Fig. 1—Front elevation

Form open notches in the angles of the legs for the rails to fit in, and check measure carefully for the length of the rails. These are halved together in the centres, and fixed to the legs by means of screw eyes driven horizontally into the legs before the rails are glued in, and screws vertically through the eyes into the stretcher rails when they are put in place.

The Lid

The lid of the cabinet is made up of four rails each 16ins. long by 2½ins. wide by ½in. thick. These are cut to 45 degree mitres at the ends, to form a square

frame which is held well together when the top overlay has been added (see sectional diagram Fig. 3). The mitres of the frame are glued together, and when the overlay is added on top, screws with countersunk heads are run in to the frame and the screw heads filled neatly with stopping. This stopping must be glasspapered level and made neat in readiness for the finish of stain and polish.

The lid frame may be further stiffened by adding wood angle blocks as shown in Fig. 3.

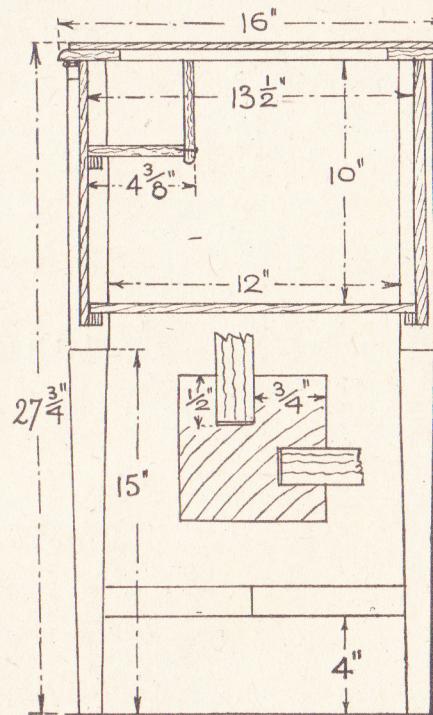


Fig. 2—Section showing measurements and construction

A small section rail is added to the back panel to take the recessed hinges as shown in Fig. 4.

Decoration

The decoration, given full-size on page 447 may be put on the front of the cabinet only or on the front and two side panels. The simplest form of decoration would, of course, be the overlay shown at the top of the page. This consists of just a plain fret-cut panel, the pattern from the sheet being stuck down to the wood, cut in the usual way, and glued on the panel. The inlay banding, a useful portion of which

is shown on the pattern sheet, is 'cut-in' the panel—the depth of the wood used—about $\frac{1}{16}$ in. or, perhaps, less. Then the two varieties of wood are cut at one time to the pattern shown and the pieces carefully glued in the grooves. A hammer previously dipped into boiling water being used to press the banding in place.

After a day's interval the inlay may be cleaned off or surfaced with a scraper and glasspaper. The process is similar for the centre inlay medallion shown full-size as a pattern. First find the exact centre of the panel or panels and proceed to trace the design and transfer it to the three varieties of wood, each piece being $\frac{1}{16}$ in. thick and about 6ins. by 5ins. Use a fine fretsaw for the cutting and take care of each section of the design for replacement.

Now lay all the pieces in their respective places on the panels, and, holding them firmly in place with one hand scratch round the outline with a needle point, and then, with suitable tools, ground out to a bare depth of $\frac{1}{16}$ in. Glue the woods in the recess and repeat the hammer process described.

Inlay Done First

It should be pointed out that all the inlay work must be done before the assembly of the cabinet, so that the work can be carried out on a flat, firm base. The grounding out work for the inlay is by no means an easy task, and some workers may choose to make up the inlay panels as overlays, by gluing them flat on the surface of the wood. The effect would be almost as good when the whole inlay surface had been glasspapered smooth and then wax polished or varnished. The choice of the actual finish to be put upon the wood of the cabinet, legs, etc., may be left to the individual worker. (404)

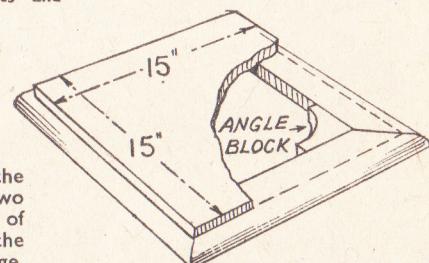


Fig. 3—Details of the lid

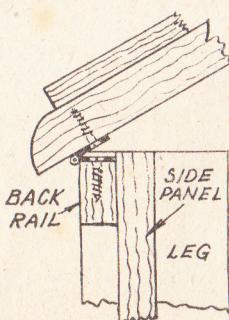


Fig. 4—Fixing the lid

**The pattern for the inlay is
given full size on page 447**

Please the kiddies with a MODEL FARM ELEVATOR

NO现代社会, the modern farmer uses elevators for all kinds of hoist work, besides their original purpose of haymaking; so that every model farm set should include one if it is to be really complete. Although similar in principle, they vary greatly in pattern according to their use; but the little model shown here is of the type often employed in the hayfield and for hoisting sacks up into a granary and similar jobs.

When they were first introduced into this country, elevators were operated by horse power, and it was customary then to see the patient horse walking round and round in a small circle, pulling a single horizontal shaft which turned an ingenious gearing-up device on the ground connected by belt to the elevator. Now, of course, either a small petrol engine, portable electric motor, or tractor is usually employed. Our little model, therefore, is designed for operation with a small electric or clockwork motor.

The measurements given are for a model 10½ ins. long, which makes a useful-sized toy in itself, but it could, of course, be easily scaled down, if necessary, to be in proportion with any other farm equipment that the modeller may have already made. Wood of ¼ in. thickness is allowed for, except the wheel blocks which are cut from 1 in. by ½ in. or something similar, and the wheels themselves which are from ½ in. wood. The only other requirements are the belt, which can be cut from a length of old inner tube, and some oddments of ½ in. and ¼ in.

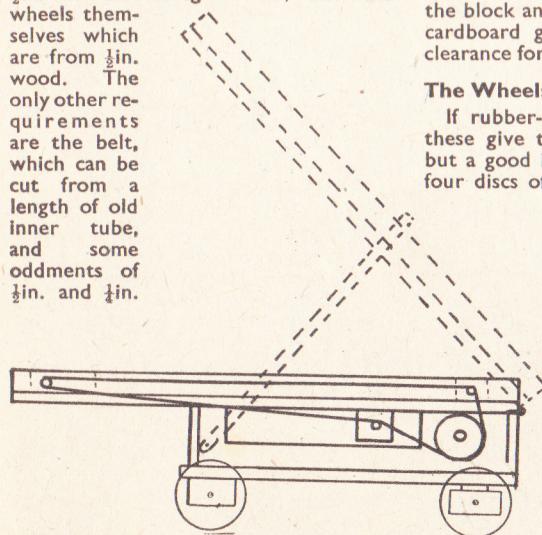
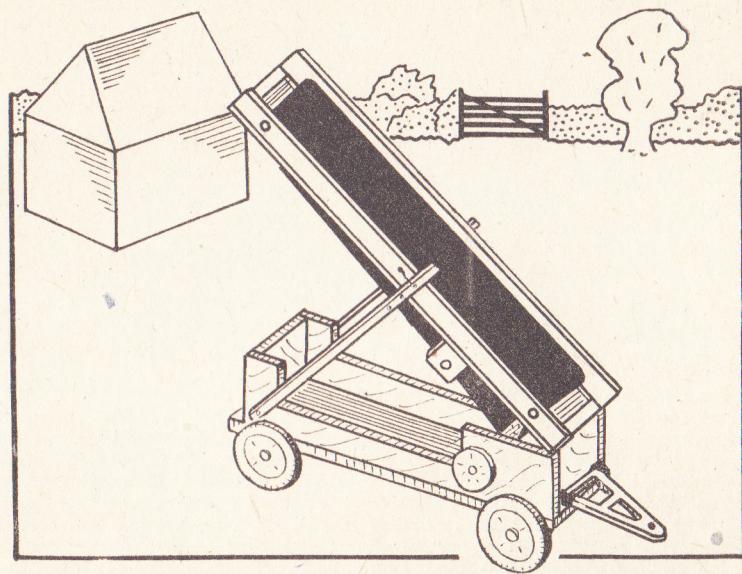


Fig. 1—Side view of the elevator

dowelling, with two small pieces of strip brass or tin for the towing-bar brackets.

Cutting Out

A general view of the elevator, with the belt down, is seen at Fig. 1, the dotted line indicating the raised position. The base of the chassis is a board 7 ins. by 3 ins., upon which the sides, cut as shown at Fig. 2, are mounted. The two



ends are 2½ ins. by 1½ ins., making a box-shaped arrangement upon which the belt-housing rests when not extended. To carry the wheels, cut two pieces 3 ins. long from the 1 in. by ½ in. material. The back piece is simply screwed to the base, but the front one provides the steering by being held to the base with a nut and bolt, as shown at Fig. 3. Between the block and the base is a strip of thick cardboard glued to the block to give clearance for the steering.

The Wheels

If rubber-tyred wheels are available, these give the model a modern finish, but a good imitation can be made from four discs of wood 1½ ins. diameter and ¼ in. thick. The outer edges are serrated diagonally with saw cuts to suggest the tread of the tyres, and when the model is painted, this edge and a ¼ in. rim is finished off black. This type of wheel is

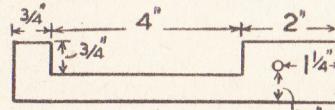


Fig. 2—Detail of sides

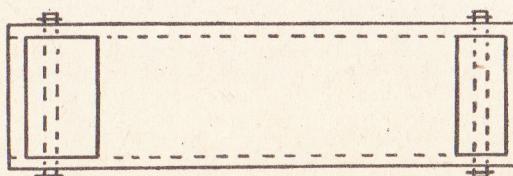


Fig. 4—Plan of belt housing

held to the blocks with screws through the centre. Note that the screw will enter the two back blocks a fraction lower down than at the front, to allow for the additional thickness of the steering clearance and still keep the model horizontal. See that the wheels spin nicely on the screws, but do not give the screws more than just a start into the blocks, so that when screwed nearly in they hold the wheels on firmly.

Belt Housing

This is shown in plan at Fig. 4. It consists of a baseboard 10½ ins. by 3 ins. upon which are screwed two strips each 10½ ins. by ½ in. Before screwing these strips down each side, however, fret the baseboard at both ends, for the belt openings, as shown, and fit the runners. These are two pieces of ¼ in. dowel 3½ ins. long. Holes of ½ in. diameter are bored for them in the sides of the belt-

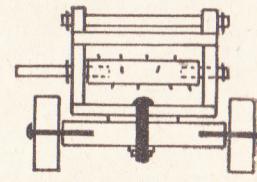


Fig. 5—Towing bar

housing immediately over the slits in the baseboard, and they are held in place with a pin through at each end. Glasspaper the dowels as necessary, so that they turn smoothly in the holes.

A similar runner is fitted to the underneath side of the belt housing as shown, to take up the belt and keep it on to the driving drum. The runner is again $\frac{1}{2}$ in. dowel, but only 3ins. long. Cut two pieces $\frac{3}{4}$ in. square, bore $\frac{1}{2}$ in. hole in each in identical positions, then glue them on to the underneath side of the belt housing. Set them in $\frac{1}{2}$ in. from the edges, so that when the spindle is fixed in the holes and held at each end with a pin, it does not project outside the edge of the belt housing. There should be about $\frac{1}{2}$ in. space between the dowel and the underneath surface of the belt housing, through which the belt will be threaded.

The Drive

Cut a piece of $\frac{1}{2}$ in. dowel to a length of 2 $\frac{1}{2}$ ins. and bore down each end with a $\frac{1}{2}$ in. bit to a depth of about $\frac{1}{2}$ in. To give a grip to the belt a number of small nails are driven into this dowel at various places all round it. Cut off the heads of the nails and file them down until they project only a fraction out of the dowel, to give a grip to the belt but not sufficient to cut it. Cut a piece of the $\frac{1}{2}$ in. dowel to 1in. long, and another 2ins. Hold the drum in position, and try the two pieces through the sides of the model into it. A little glasspapering may be necessary to ensure that the drum spins nicely. Then fix the $\frac{1}{2}$ in. dowels inside the thicker piece with a spot of glue, and secure the whole in place with a pin through either side. On the longer end of this spindle is fitted the driving

| CUTTING LIST (For wood of $\frac{1}{2}$ thickness except where stated) | | |
|---|------------------------------|--|
| No. of pieces | Description | Size |
| 1 | Chassis base board | 7" x 3" |
| 2 | Chassis sides | $6\frac{3}{4}$ " x 1 $\frac{1}{2}$ " |
| 2 | Chassis ends | $2\frac{1}{2}$ " x 1 $\frac{1}{2}$ " |
| 2 | Wheel blocks | $3\frac{1}{2}$ " x $\frac{1}{2}$ " x $\frac{1}{2}$ " |
| 4 | Wheels | 1 $\frac{1}{2}$ " diam. x $\frac{1}{8}$ " |
| 1 | Belt housing base | 10 $\frac{1}{2}$ " x 3" |
| 2 | Belt housing sides | 10 $\frac{1}{2}$ " x 1 $\frac{1}{2}$ " |
| 2 | Stays | $6\frac{1}{2}$ " x $\frac{3}{8}$ " |
| 1 | Towing bar | $2\frac{1}{2}$ " x $2\frac{1}{2}$ " |
| 2 | Belt housing runners | 3 $\frac{1}{2}$ " x $\frac{1}{4}$ " dowel |
| 1 | Belt housing runners | 3" x $\frac{1}{4}$ " dowel |
| 2 | Belt housing runners bearers | 3" x $\frac{3}{4}$ " dowel |
| 1 | Drum | $2\frac{3}{4}$ " x $\frac{3}{8}$ " dowel |
| | Drum spindle | 1" x $\frac{1}{4}$ " dowel |
| | Driving wheel | 2" x $\frac{1}{4}$ " dowel |
| | | 1" diameter (3 ply) |

wheel. This is made up sandwich-fashion from two discs of thin wood 1in. in diameter with a piece of stout cardboard between them $\frac{1}{2}$ in. diameter. When the glue is dry bore through with a $\frac{1}{2}$ in. bit, and glue the wheel on to the spindle.

Fixing the Belt Housing

The belt housing is fixed to the chassis with two small hinges at the front, as shown. To hold it in its raised position cut two thin strips 6ins. long and $\frac{1}{2}$ in. wide and bore several holes in each, towards one end, in identical places, to give alternative heights for the belt. Fix these two stays with screws to the side of the chassis. At the other end, bore a suitable hole in each side of the

belt housing and put a small screw in about 1in. away. Make two small pegs and attach them to the screws with string or wire, so that they can be used to peg the belt housing up at any required height. When not in use these arms fold down until they rest on the projecting ends of the driving spindle.

The Belt

This is best cut from rubber, and an old cycle inner tube serves well, though stout paper would suffice. Cut the tube through and slit it all the way down. If it is more than 2ins. wide when opened out, trim it down to this. It needs to be about 20ins. long. Thread it through the elevator belt openings, round the drum and up over the bearer on the underneath side of the belt housing. Pull it fairly tight and secure the ends with rubber solution, holding them or putting a pin in temporarily until the solution is dry. Make sure the belt is tight enough to be driven by the drum, but not too stiff to be worked by the motor. A little graphite from a lead pencil rubbed in the spindle bearings helps it to work smoothly.

Towing Bar

A suitable shape for the towing bar is given at Fig. 5. Cut two pieces of brass strip 1in. long and $\frac{1}{2}$ in. wide, mark them into two halves then bore holes in the centres of each half. Bend them to a rightangle and fix them on to the front of the chassis with screws. The towing bar is then held between these two brackets by means of a screw at each side, as shown.

Finish the model carefully with bright red enamel, outlining each part with black.

(405)

Wighton House, 206-212 St. John Street, London, E.C.1.

Curing Rabbit Skins

REGARDING your notes on how to cure rabbit skins, I get in difficulty as I find the hairs come off in handfuls. Could it be because I take off the very fine skin, or what do you suggest? Could you tell me what instrument to use for scraping the fleshy part of the skin? (D.F.—Alness).

THE loss of hair 'in handfuls' suggests that you have reduced the pelt too much, or the rabbit may have been caught at the moulting season, left too long before skinning, or the pelt may have been improperly treated. In no case should any part of the pelt be cut away. The usual method of preparation is to place the pelt in an alkaline bath, then with a wooden tool, somewhat like a butter-pat, work out the moisture, then fix a blunt-edged knife in an upright position and draw the fleshy side of the pelt gently to and fro to remove any fleshy material and prevent any unevenness. The pelt is then greased and beaten, kneaded and finally cleaned in hot dry hard sawdust, shaken out and beaten on a leather cushion or the like.

MATTERS of INTEREST

Electric Signals

COULD you tell me how to build and manipulate electric signals in such a way that when the red light burns, current will be cut off from the section on which the train will run? (L.A.—Antwerp).

ANY section of the line could be made to operate in the manner you suggest, by the use of a single-pole two-way switch. This should be wired so that when in one position, current is supplied to the red light, and when it is turned to the second position, current goes to the section of line in question (and green light, if used). It will, of course, be necessary to keep the conductor rails of such sections of track electrically insulated from the other sections, in order that any particular section can be cut out, without the whole track being influenced. The outer rails, and one lamp terminal, should be permanently wired to one electric

supply point, the second of which goes to the switch mentioned.

Hot-air Incubator

I SHOULD like to make the hot-air incubator described in "Hobbies Weekly", so would you send me further details, such as what lamp and heater, etc., to use? (P.C.—Lowestoft).

SUCH fittings as capsule, thermometer, lamp and heater are best purchased. You could buy a burner and solder it to a metal container for the lamp, but the saving is scarcely worth it. The heater is a somewhat complicated piece of work, and would require a whole illustrated article to explain, besides needing metalcraft to make. As it is a vital part of the machine, it is far wiser to purchase one than to make one, as the efficiency of the whole depends upon it. The fittings mentioned can be obtained from S.P.B.A. Supplies Ltd.,

Any handyman should be capable of making this MOTOR-CYCLE GARAGE

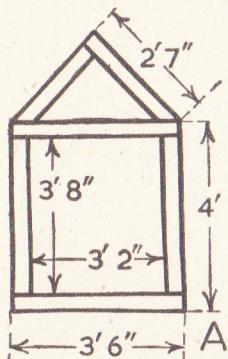
IT is false economy to spend a fair sum of money on a motor cycle and then to protect it from the weather only by throwing a tarpaulin over it.

Admittedly, a sectional motor cycle garage is by no means cheap to buy nowadays, but any fellow who can handle a saw, hammer and screwdriver should be able to make a garage of the type illustrated. It is not too large a building (measuring rather more than 8ft. long and 6ft. high overall), and if not required for storing a motor cycle it will always come in useful for the humbler push-bike, or even serve as a tool shed.

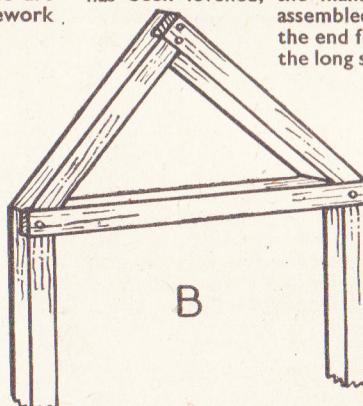
Red deal or other softwood would be ideal for the construction, but except in the form of salvaged timber this is difficult to come by. Some of the recently imported tropical hardwoods, however, are quite cheap, easy to work, and licence-free, so a chat with a local timber merchant should solve the problem.

Starting The Work

The work can be started on the two gabled end frames, using 2in. by 1in. material. For each frame, two uprights 4ft. high, and a top and bottom rail 3ft. 6ins. long, are needed. These are assembled into a rectangular framework.



Dimensions of end frameworks

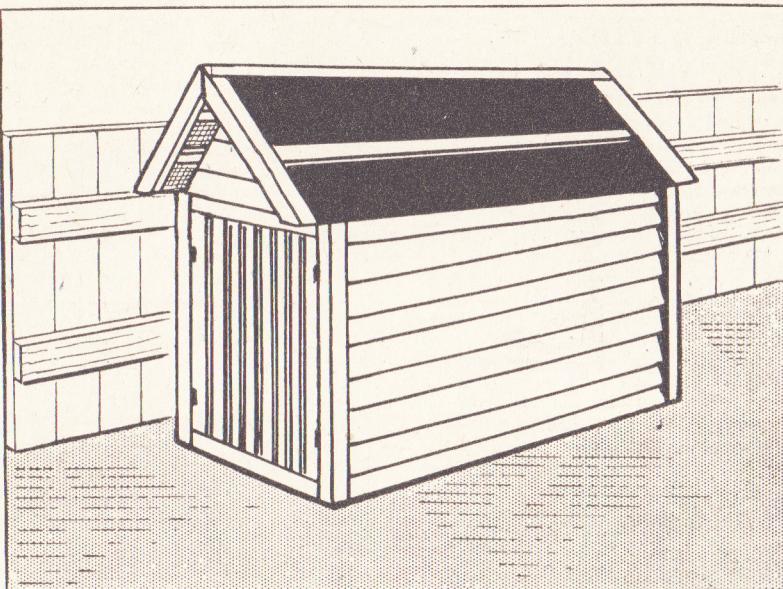


Fitting the gable on the top rail

by halved joints at the corners. Then the gables are prepared. On each frame, two 2ft. 7in. lengths are halved together at one end, while the free ends are sawn across at the appropriate angle so that they bed down correctly on the top rail.

Drawing (A) shows the main dimensions of one of the end frameworks, while (B) shows the fitting of the actual gable on the top rail.

The long side frames measure 7ft. 10ins. long by 4ft. high, and are of 2in. by 1in. stock. Halved joints are used on the corners of the frameworks as before, but the frames are made more rigid by two intermediate uprights half-lapped into place between the top and bottom rails. Drawing (C) gives the dimensions of one of these frames.

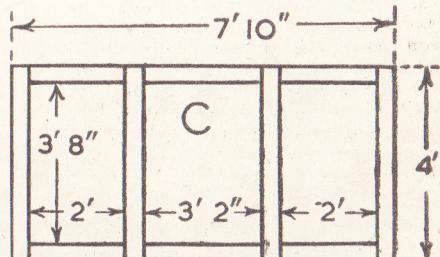


When complete, all four frames are taken to the site, and, after the ground has been levelled, the main carcase is assembled by fixing the end frames on to the long sides. This

upright from the long side of the shed to a distance equivalent to the thickness of the weatherboarding being used; the fillet should have a bearing surface of 1in. on the frame.

Pieces of weatherboarding are then cut to length and nailed into position, working from the bottom upwards. On

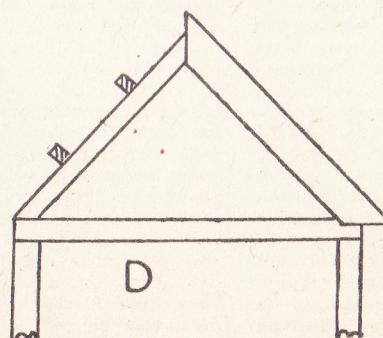
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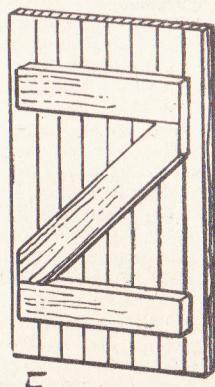
Dimensions of side frames

can be done either by screwing or by nailing, but it is essential that all frames be truly vertical when erected.

The two long sides and back of the garage can then be weatherboarded to make the structure more rigid. To do this, a small fillet should be nailed to each of the upright members of the back end frame. Each of these fillets should project beyond the



Dealing with the roof



The door

To protect your seeds you need AN EFFICIENT BIRD SCARER

THE greatest menace to the gardener with freshly sown seeds are the mischievous birds who delight in pecking and scratching away at the neat rows. They can do a great amount of damage unless something is done to try to scare them away. Many devices have been tried out, from the simple rows of black cotton to complicated alarm systems including scarecrows with a varying degree of frightfulness.

The scarer described here has been a great success where it has been tried. It is quite simple to make from odd pieces of material, and has the advantage that it can be easily moved to a new site when required.

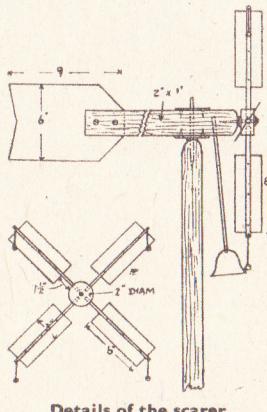
Reference to the sketch will show that the rotating vanes of the windmill each have a small weight attached to the end by a piece of cord. These in turn strike the bell, and scare the birds away not only by the noise but also by their action.

Not Too Large

It is best not to make this windmill too large, otherwise it will want more than a puff of wind to work it. The sizes given will make a useful model for all general purposes, but several smaller ones could be placed at strategic positions in the garden.

The windmill vanes are made first and mounted on to a circular block of wood 2ins. diameter and 1in. thick. A hard-wood toy wheel will do very well for this, but the centre hole must not be too large. Drill four holes about $\frac{1}{8}$ in. deep around the edge to fit $\frac{1}{8}$ in. dowel rod $8\frac{1}{2}$ ins. long. With a fine saw, cut down the centre of each rod to a distance of $6\frac{1}{2}$ ins. and insert the vanes, which are made of sheet metal. An old cocoa tin or something similar will provide enough

sheet for each vane. Cut open, hammer out flat, and cut 6ins. long and 3ins. wide. Then fix into the dowel rod slots. Three rivets will be sufficient to hold them tight, drilling small holes before inserting the rivets. Also drill a small hole in the end of each rod to which to fasten the cord and weight. Small lead balls, or, better still, the little bells used on children's reins, would be suitable, leaving them suspended on 2ins. or 3ins. of cord or string.



Details of the scarer

Now, firmly glue the four rods into the centre, making sure that they are all placed at the same angle—say, about 35 degrees. It does not matter in which direction they slope; one way making the windmill turn in a clockwise manner, and the other way the reverse.

The wood bar on which the windmill turns is 18ins. long, 2ins. wide and 1in. thick. Round off the nose part and drill a small hole for the 3in. round head bearing screw for the vanes, making sure

that it is drilled true and centrally.

Cut a thin slot in the opposite end about 4ins. down for the tail fin. A piece of tinplate 9ins. long and 6ins. wide cut to the shape shown is bolted into the slot. When screwing the vanes into position, place a washer on either side of the centre boss.

A length of $\frac{1}{8}$ in. dowel rod is next fitted into the underside of the bar near to the nose. Drill a hole slightly on the slant just behind the front screw. The exact amount of slant will be determined by the size of the bell and also the distance of the weights or bells on the tips. Measure up carefully before fixing this. The bell, which can be an old alarm clock bell or a cycle bell as large as you can get, is screwed into the end of the dowel rod with a wood screw. Cut the rod too long to begin with and shorten it until it is at the correct striking distance from the weights.

Pivot The Bar

In order that the windmill will swing round to face the wind, the bar must be pivoted at its centre of balance. Place the bar on a thin edge, such as a rule, and move it along until it balances, then drill a hole to take the pivot. This can be a piece of steel rod about $\frac{1}{8}$ in. diameter.

A small metal plate is now fitted on either side of the wood bar to form bearings, and can be quite small brass pieces fastened with wood screws. The holes should just fit the pivots while the wood centre hole can be enlarged.

The post holding the windmill should not be too tall—just sufficient to catch enough wind to turn it. With the exception of pivots and holes, which can have a dab of grease, the whole job should receive two coats of good oil paint. (203)

Motor-Cycle Garage—(Continued from page 437)

the end frame the weatherboarding fits between the rebates made by the two fillets, but on the long side each plank butts against the projecting fillet and passes along the side to the front frame. At the front, the weatherboarding stops short at $\frac{1}{2}$ in. from the front edge of the frame, and a small fillet of wood is then nailed on to the upright of each front frame. This fillet covers the end-grain of the side weatherboarding, and fits flush with the front face of the frame.

The gable end at the front of the garage can be similarly boarded, but here the bottom edge of the bottom plank comes slightly below the top edge of the top rail.

Two roof 'purlins' are nailed across the gables on each side, being spaced an equal distance apart. These purlins are of 2in. by 1in. section set on edge, and project 5ins. beyond each end frame. The roofing boards can then be nailed into place, these being about 2ft. 11ins. in length. The nails are driven into the

purlins, and when all boards have been fixed, the roof can be covered with roofing felt. The felt should be laid in horizontal strips, the upper strips overlapping the lower.

Two narrow battens are planed to the appropriate angle along one edge, and are then fastened along the ridge, one on each side of the gable. Similar strips are put down the slope of the roof, level with its outside edges, and it is also advisable to nail a strip over any horizontal joint in the roofing felt.

To cover the end-grain of the purlins, 'barge-boards' are fitted over them at each end. These boards meet in a mitre angle on the apex of the gable, while the lower edges are cut off parallel with the horizontal rails of the frame.

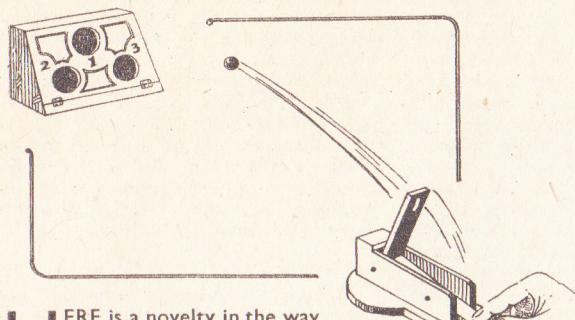
All this construction is made clear from drawing (D) the left-hand side of which shows the purlins while the right-hand side shows the barge-boards.

Although a single door can be fitted if

desired, it will be found more satisfactory to have double doors. These doors are of the very simplest construction. Each measures 3ft. 8ins. high by 1ft. 7ins. wide, and they are hinged to the inside edges of the front frame uprights. Each door consists of lengths of grooved and tongued boarding to make up the required width, the boarding being nailed on to three inside rails. A horizontal rail is placed near top and bottom edges of the door, while the third rail fits diagonally between them (see drawing E). When hinging these doors into place it should be done so that the top edges of the diagonal braces are on the meeting edges of the doors.

This completes the actual construction, for it is unnecessary to provide a floor or to line the inside. It is advisable to fix a hasp, staple and bolts, while the whole garage should be given two good coats of creosote. (117)

The children—and their elders—will enjoy this NOVELTY BALL GAME



HERE is a novelty in the way of table games which should catch on and afford much amusement to the younger people. It can be easily made up by the handyman with a few tools, a fretsaw, nails and screws.

The game consists of shooting a number of small wooden balls into the holes of a specially made box.* The novelty lies in the mechanism of the 'thrower' which is so designed that skill and judgment must be exercised when throwing the balls to guide them into the openings of the box. The whole idea can be got by a glance at the picture of the finished article on this page. Here we see the box with three holes cut in a lid which is hinged to a lower rail so that it may open forward for removing the balls from the three separate divisions inside the box. A little decoration of simple panelling carried out in colour would add greatly to the attractiveness of the lid. The other parts of the box need only be plain in character. The lid, it will be noted, lies at a convenient slope to suit the throw of the balls, the box itself makes a useful storage place for all the parts of the game.

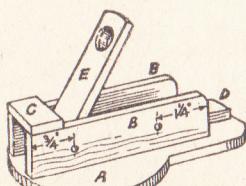


Fig. 2—The thrower

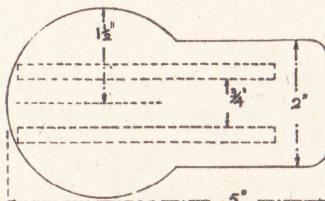


Fig. 3—Plan of the thrower

The Box

Commence work by making the box, the construction of which is easily understood from Fig. 1.

Wood $\frac{1}{4}$ in. thick would be suitable for all parts, and the method of cutting the pieces and their measurements as well as the arrangement of putting them together are all shown in the diagram. First set out the back of the box. This will measure 14ins. by $7\frac{1}{2}$ ins. To this glue and nail the floor and the top, measuring 14ins. by 4ins. and 14ins. by

2ins. respectively. Between these pieces fit and glue the shaped ends which will be $7\frac{1}{2}$ ins. long by 4ins. at the widest part. When the ends are fixed and the glue has hardened, plane away the front edge of the floor and top to the same angle as the ends, making all smooth and even for the door to rest accurately. The inside partitions of the

box, two in number, are placed centrally each way, and they should be glued and nailed securely to the ends and floor of the box. Plane the front edge of the horizontal partition in a similar manner to the floor and top. To get the true size of the lid, take the measurements direct from the box so far made and allow for cleaning up. At a distance of about $1\frac{1}{2}$ ins. up from the

The Thrower

An admirable idea of this is got from the sketch, and from the view of the finished thing in Fig. 2. There is a base piece (A) of which a plan is given in Fig. 3, with all necessary measurements for drawing out the outline on the wood.

The dotted lines shown on the plan give the position of the side uprights (B), which measure 4ins. by 1in. On one of these sides must be carefully plotted the exact position of the two pivot-screw holes, and in Fig. 2 the measurements for these are given. First bore the holes in one side piece and then lay this on the second side in true position as a guide for running the holes through the second side. Glue the sides to the base in the positions given and then mark out and cut the small piece (C) which is intended to bind the two sides together and also to form a stop for the lever (E) when this is thrown upwards. The piece (C) measures $1\frac{1}{2}$ ins. by $\frac{7}{8}$ in.

The Spring Board

The foregoing parts then form the frame as it were for containing the two moving levers (D) and (E). In order to throw the balls in the right direction towards the target, the spring board (E) will be pivoted a little above its lower end, and a diagram of this piece is included in Fig. 4 with all dimensions given. A hole is cut at the top end of the piece in which the ball will rest. This hole is bevelled round afterwards and glasspapered smooth. The lever (E) is thrown upwards by the lever (D) coming in contact with it just above its pivot. The movement can be seen from the sectional view Fig. 5. When the lever (D) is depressed with the forefinger, this lever being pivoted, its opposite end is raised and makes contact with lever (E). The force of the throw and, of course, the length of the throw, too, is regulated by the touch of the finger, and it is this power of touch which, through practice, enables the player to throw the balls skilfully into their holes. Some care must be taken in boring the holes in the side edges of the levers (D) and (E) to get them all exactly opposite and squarely run in. The holes in the sides of the frame must be large enough for the pivot screws to

(Continued at foot of page 442)

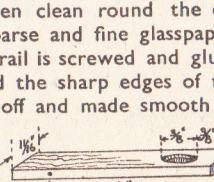


Fig. 4—The spring board

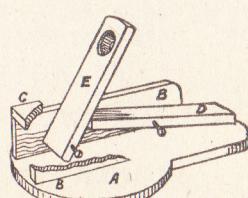
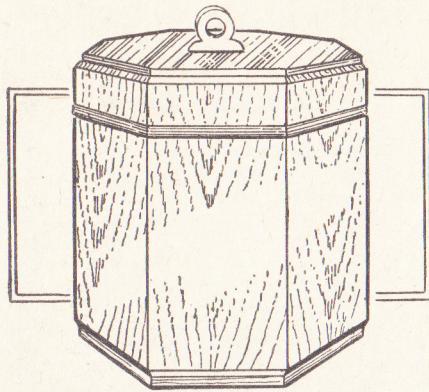


Fig. 5—Details of the movement

You can make this useful

FLOUR BARREL



THIS is a useful article for the kitchen, and a rather uncommon article of woodwork for the carpenter to make; a change from the more conventional style of work. It has a rather novel appearance, not unpleasing, and needs no great amount of wood to construct. For the wood, it is suggested that fretwood, $\frac{1}{2}$ in. thick be employed for the top and base, with $\frac{1}{8}$ in. deal for the staves, etc. A spare end of matchboarding would supply the small quantity of deal required, and if it has to be bought, perhaps a local timber merchant may be able to find one or two short ends for the purpose.

Marking The Shape

The shape is octagonal, as shown in the illustration, and this can be marked out direct to the wood. For the lid, and base, cut two squares of the fretwood, 7ins. each way, and centre with diagonal lines. With a radius of corner to centre, as shown at (A) in Fig. 1, strike the arcs, and draw lines, as shown in the diagram, where these arcs contact the sides of the square. One octagon being cut, the edges should be lightly glasspapered smooth, then it can be laid upon the second square and a pencil run round it, to mark its shape and save setting out the octagon again.

From deal, $\frac{1}{8}$ in. or $\frac{1}{2}$ in. thick, mark out another octagon, this time on $6\frac{1}{2}$ ins. squares. Two of these will be required, one for the actual bottom of the barrel, and the other for fixing under the lid to form a rim. At (B) a pattern for the staves is given, eight being required. Cut to dimensions given, and near the top saw and chisel out a $\frac{1}{8}$ in. wide groove, $\frac{1}{16}$ in. deep. Use a gauge for marking these, as the grooves must be in true alignment all round.

The staves must be bevelled on their meeting edges to an angle of $67\frac{1}{2}$ degrees, so that they meet closely together when assembled. To better ensure this, it is a

good plan to prepare two wedges to the angle of $22\frac{1}{2}$ degrees, and nail these to the shooting board, the staves being held upon them while their edges are planed. The width of the staves is rather full, to allow for any inequality in the lengths of the sides of the octagon.

Fitting The Staves

The staves, after planing, should be fitted, one at a time, as at (C)

Fig. 2 to the smaller octagon, and partly nailed. Fit each stave very carefully, and when all are so fitted, tie a cord round the groove, slip a piece of wood behind the cord and tighten, as shown in Fig. 3. These should be a close fit all round. All being satisfactory, remove the staves, glue them, and refix. Do this job quickly, and be sure each stave is refixed to its own particular side. All being on, without losing any time replace cord and twist tight, then leave for a few hours for the glue to set hard. A small nail can be driven in the groove, under which the stick can be held to prevent it untwisting and loosening the retaining cord.

Now, with a small plane or file, bevel the top and bottom of the barrel, thinning the ends of the staves to just $\frac{1}{8}$ in. Finish smooth with glasspaper. Take one of the fretwood octagons for the base of the barrel. From the centre of this cut out a $2\frac{1}{2}$ in. diameter circle. This can afterwards be used for making

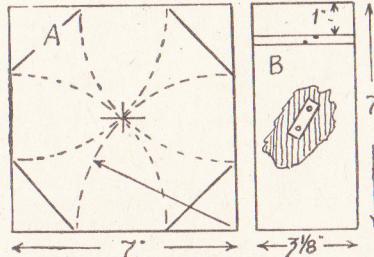


Fig. 1—Dimensions of the base and staves

the handle; then glue and nail the octagon to the bottom of the barrel. It should just cover it, as in detail (D) in Fig. 2.

In the groove, drill two small holes, about $\frac{1}{8}$ in. apart. These are indicated by dots in (B). On the inside cut out a groove, $\frac{1}{8}$ in. deep, connecting these holes, as shown in the inset in (B). You will now need a small coil of thin brass or copper wire, such as you can buy at

most hardware shops for a few pence. Thread one end of the wire in the lower hole and plug it, to prevent it shifting out, with a small nail. Wind the wire tightly in the groove until full, cut off, and push the end in the second hole. Remove the nail, and twist the two ends of the wire. Cut off short, and tap the ends into the groove on the inside. Fill the groove with sealing wax or hard stopping. So much for the body of the barrel, now for the lid.

A Handle

For a handle, a wood or metal knob can be fitted, but failing that a handle can be cut to the shape shown at (E) Fig. 2, from the circle of fretwood cut from the base. Take the second octagonal, the fretwood one, and in its centre cut out a mortise slot to fit tightly the tenon at the foot of the handle. Now glue the deal octagon to the underside of the fretwood one, and glue the handle in. This completes the work.

The inside of the barrel, and underside of the lid should be left plain. All the rest should be well glasspapered, and then can be stained light oak and varnished or enamelled white, as pre-

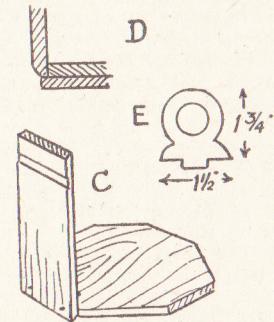


Fig. 2—Constructional details

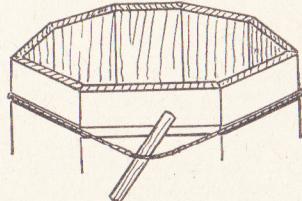


Fig. 3—Holding the staves after gluing ferred. In fact the whole could be left in the plain wood, but it soon soils, and some finish is to be preferred.

No cutting list is really needed for this article. For the fretwood, a 7in. by 14in. panel will suffice. For the remainder about 5ft. to 6ft. of matchboarding will be needed, $\frac{1}{8}$ in. thick, or a lesser quantity if the wood is wider than matchboarding usually is. Any odd piece of deal, of suitable thickness can be used for making the deal octagons. (100)

**Our Advertisement pages are always
worth your careful attention**

An angler tells you HOW TO CATCH TROUT

THE trout fishing season opened in March on many rivers and brooks, but it is not until April that trouting becomes general. From this month until the end of September, when the season closes, the trout affords some of the finest sport with rod and line desirable. Those of my readers who can obtain access to a trout water, and go the right way to work may be assured of plenty of good fun trying to catch the wary speckled fishes. The best trout rivers are found in Devon, Somerset, Wales, Derbyshire, Lake District, the Yorkshire dales, Northumberland, and in most parts of Scotland.

It is necessary to take out a licence for fishing in England and Wales, and in many places it is also necessary to seek permission or to pay a moderate fee for a ticket or permit. There are some small streams where trout-fishing is free, but they are not many. It is, therefore, important to see that you have complied with all the preliminaries before you cast a line over a trout water.

The Outfit

There are various methods of fishing for trout. Briefly, fly-fishing, bait-fishing, bottom fishing, dapping, and spinning. The two methods most likely to attract the beginner are the two foremost, that is, with fly on fly-tackle, and bait—worms, grubs, caterpillars, etc.—on ordinary float tackle, or without a float.

Suppose we take fly-fishing first. This art is not half so difficult to acquire as many folk think. You need the right kind of tackle, and then plenty of practice at the start to enable you to throw an artificial lure with ease and accuracy.

Outfit required: Light split-cane or greenheart fly-rod, 9ft. 6ins. to 10ft. 6ins., with a check reel, aluminium or gun-metal, 2½ins. to 3ins. diameter; level or tapered dressed silk line 40yds. long; and a short length of backing line, which is wound on the reel first, the proper line being attached to it. You will, of course, secure the backing line to the reel before winding on.

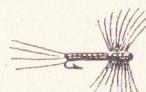
Also needed are half-a-dozen casts of silkworm gut or Nylon, or such synthetic material as Monoflow, Luron, or other gut substitute, either 2yds. or 3yds. long, and a small selection of artificial flies. Many old hands have fly-boxes bang full of all sorts of patterns, often accumulated over long years and some hardly ever used. Do not aspire to this fly collecting, but content yourself with a few proved serviceable lures and pin

your faith to skill and hard fishing, rather than to constant changing of flies. A lot of time can be wasted if you get into the habit of changing your fly every few minutes, just because you do not get a trout straight away. Put on a likely fly, and persevere with it; when, after a patient trial, nothing happens, try another one; but give any likely fly a fair trial.

For 'wet' fly fishing—i.e. casting your lure into the likely spots where trout usually feed, allowing it to sink a little below the surface (under some conditions it may be advisable to let the lure sink fairly deep), and working it with slight jerks of the rod-top as it floats downstream towards you. Do not have too much line out, at first—you can do your fancy casting when more experienced. It is wise to get some practice before you go to the river or beck to fish, by going on to a meadow or on the lawn, or other suitable spot, and casting your fly at some object placed at a little distance—a saucer or a tin lid will do. Mark this, and endeavour to get your fly to alight on it, or as near to it as possible. When you have acquired the knack of it and can manage the job without tangling yourself up in the line at every throw, you may go to the scene of action with confidence.

The Best Method

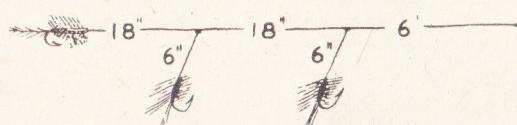
The method of 'wet-fly' fishing is the



HACKLED FLY
(DRY)



DRY FLY
(SPLIT WINGED)



WET FLY CAST WITH "TAIL" FLY AND TWO DROPPERS

best for a start. You can use just one fly at the end of your cast, but many anglers also attach two more flies at distances of about 18ins. between, to the cast, employing short lengths of gut—known as 'points'—to attach them. These should be about 6ins. in length. You get a better chance of picking up a fish if using two or three lures rather than one only.

As to flies for this sunken method, you cannot do better than stock your fly-box (a fair-sized tobacco tin will serve for carrying your wares) with the following half-dozen: Black Spider; March Brown, hackled pattern; Red Palmer; Iron-blue

Dun; Orange Partridge; Greenwell's Glory.

You can add the Blue Upright (especially if fishing Devon and Somerset or Cornwall waters) and the Alder, Coch-y-bondhu, and Wickham's Fancy.

Where the 'wet' fly succeeds most is on the smaller and faster-flowing waters. The quick runs, the tails of pools, sharp, tumbling waters which widen and shallow across a pebbly section, then swing right or left, deepening, under the near or the off bank—all these places should be well tried out, for trout often lurk in such spots.

A Fine Art

'Dry' fly-fishing is really something of a fine art, which you can aspire to as you develop into the skilled craftsman. In this method only one fly is used, and this is anointed with a drop or two of liquid paraffin on a small brush, which is carried in a small bottle in your waist-coat pocket ready. The fly is cast at any rising fish you may see, and is allowed to float quietly down to where the 'rise' has been noted. Your object must be to try to fish so that there is no unnatural drag at the fly by the current; it should come down over or just past the feeding fish quite naturally. A swirl in the water will generally denote that a fish has sucked in the lure—do not snatch; take things easily, and with a twist of your wrist get the hook home in his jaw. It is necessary to watch, as the lure floats downstream, that there is no slack line; therefore, you gather the slack up with your left hand as it comes towards you.

Useful 'dry' flies include Black Gnat, Blue Dun, Olive Dun, Greenwell, Coachman, May-fly, Red Spinner, Wickham, Sedge, etc.

With Baits

Trout-fishing is successful on most streams if you are permitted to use baits, but on some waters 'fly only' is the rule. However, there are hundreds of brooks and stretches of rivers where it is in order to fish with worms (red and brandling) dock grubs, wasp grubs (in season), beetles, larvae, maggots, and so on.

You require no special tackle. A light cane rod and the same tackle as you would use for dace, perch, and chub, with a suitable float, and a 1yd. gut or Nylon cast mounted with a No. 10 crystal hook, the line being the usual silk undressed, greased, about 30yds. long, on a free-running reel, will serve you very well.

A method known as 'swimming the worm' is practised a lot in summer on North-country streams. In this style the worm is cast upstream like you would throw a fly. Practice is needed, as with other forms of angling.

There'll be plenty of amusement with 'TUMBLING THOMAS'

THIS amusing toy is in the form of a tank-like hollow box containing a rolling weight. When placed at the head of a slight slope, it rolls down, head-over-heels fashion. A comic cat is painted on the outside and this gives the toy its name. If, for any reason, the reader does not fancy a cat, it is quite easy to substitute, say, a clown figure. Better—make several tumblers and decorate them all differently.

Planning The Sides

The first thing to do is to plan out the oval sides. It is, perhaps, best to make a thin card pattern. First draw a horizontal line A-B (Fig. 1) and then a vertical one C-D, crossing at X. From X, either side, mark off points E and F. These are both $1\frac{1}{2}$ ins. from the centre. Mark off, also X-G $1\frac{1}{2}$ ins. Stick pins or thin nails in points E-F-G. (They are actually upright. In the illustration they are shown diagrammatically). Tie a piece of cotton round E-F-G and see that the knot does not slip. Now take out the pin at G and slip the point of a pencil in the loop. Draw the pencil round, straining at the loop and a perfect oval will result. The chain-dotted lines in the lower half of Fig. 1 show this stage.

(Incidentally, most readers will know this method of obtaining an oval with a loop of cotton, but not so many will know how to produce an oval of any desired dimensions without any guess-work or tedious trial and error with the locating of the pins. Yet it is very simple. If X-H is half the major axis and X-G half the minor axis, space off X-H with the compasses, then, keeping this distance, place the point at G, and mark off E and F with the pencil end).

Having obtained the pencilled oval on thin card, cut it out so that it can be used as a template for marking off the wooden pieces. These can be about $\frac{1}{8}$ in. thick, and preferably of solid wood, not ply. Soft wood is best, as pins have to be driven in. Cut out two pieces thus with a fretsaw. Place them together with a couple of nails half-driven in to hold them together, temporarily, and with a wood file, etc. get them both alike.

Now take a long strip of cardboard, quite thin, and a fraction over $2\frac{1}{2}$ ins. wide. Fasten one end to the two wooden shapes as shown in Fig. 2, carry it right round, and continue winding it round, applying thin glue, and securing at the sides with very small panel pins or shoe-

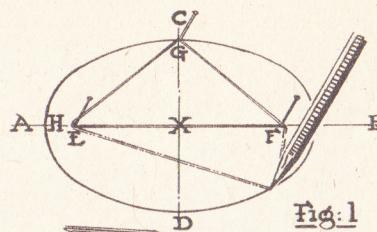


Fig. 1

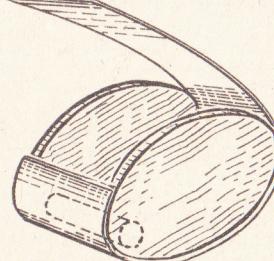


Fig. 2

One-inch squares.

repairs' rivets. Do not worry overmuch about neatness at this stage, as this card will be covered afterwards. The card should overlap the sides very slightly so that afterwards the whole job can be rubbed against a sheet of glass-paper and made perfectly flat.

Several thicknesses of card should be applied, so that one has a substantial job, not likely to be wrecked as soon as played with.

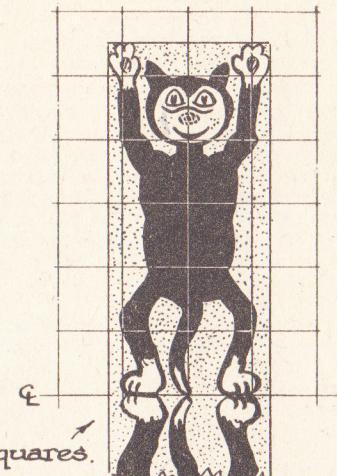
The All-Important Weight

Before closing the interior, however, the all-important weight must be added. This is a piece of iron rod, a trifle smaller than the width of the box and about $\frac{1}{2}$ in. diameter. If too heavy the toy will be a little beyond young hands. If the weight is insufficient the toy will act very sluggishly. A simple test will show what to use. Large ball-bearings can also be used but not, for example, iron nuts. The weight must roll smoothly.

The cat design is now applied. This is drawn on a slip of paper and pasted on. Fig. 3 shows a suggested design, marked off in 1 in. squares for enlarging. Note that only half the pattern is shown with a bit to show how the other half is merely a repeat, upside down, of the first part. If several models are to be made, all alike, duplicates of the pattern can either be traced off by means of carbon paper, etc. or even by means of a hectograph.

Except by a fluke, it is unlikely that

Fig. 3



the length of the pattern, as given, will exactly tally with the length round the reader's model, but it can easily be extended by increasing the length of the fore-paws (or reduced in a similar way). Allow 1 in. or so of plain paper at one end for lapping.

Before pasting the pattern on, it is best to decorate the sides. If one has a paint sprayer, this can be a very easy matter. First paint, freehand, with oil paints or enamels, circles slightly larger in size than pennies, halfpennies and farthings. Place the circles at random. When these are dry, place appropriate coins over them and spray with a darker paint (the first circles should be in light, bright colours). When the coins are tipped off, perfect circles of colour will be seen on a dark ground.

But for those who work with a simple paint-brush, other methods will suggest themselves.

Now paste on the cat pattern, and colour it. Poster colours will suffice. The cat, of course, is black with a pink nose and paw pads and green eyes. The background (shown stippled in Fig. 3) is light green. When thoroughly dry, the job is varnished with clear picture varnish. This is most essential as otherwise the toy will soon get very dirty and the paint will rub off.

It is hardly necessary to point out that one does not have to be a skilled artist to prepare the design. The more odd the cat looks, the more fun is the toy.

(102)

Novelty Ball Game—(Continued from page 439)

move about freely, but the screws must be properly screwed into the levers. In the diagram Fig. 5, the near side (B) is shown mostly cut away so that the pivot screws may be seen in relation to the levers, etc. Note that the levers must work freely between the two

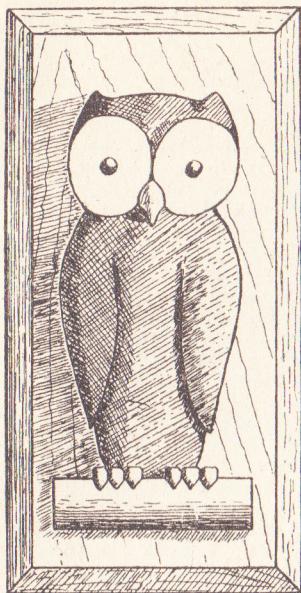
sides (B), and they should be glass-papered down to work freely and accurately.

The balls should preferably be of wood and $\frac{1}{8}$ in. diameter, ordinary marbles would do but not quite so well. All parts of the thrower may be coated

with varnish or, of course, could be painted the same colours as the box.

Proper scoring as a game could be adopted when playing. Six balls or more may be used, and score totalled up by opening the box front and noting the number of balls in each division.

Please your visitors by fitting AN OWL DOOR KNOCKER



THE plainest front door can be made attractive by an unusual knocker. This friendly little owl will please you and your visitors quite as much as the fancy brass ones sold in many of our holiday resorts. It has, moreover, the unusual feature of being made of wood.

The only wood needed is a piece of $\frac{1}{2}$ in. or $\frac{3}{4}$ in. board 7ins. by 3ins. on which to mount the owl; 3ins. of $\frac{1}{4}$ in. dowel; and a 6in. length of $2\frac{1}{2}$ ins. by 2ins. stuff from which to cut the owl.

Shaping the Bird

The making of the owl is simplified by carefully pencilling inch squares on the wood, as shown in Figs. 1 and 2, and then using these to draw the bird. If saw-cuts are now made in the directions of the dotted lines the rough block will be ready for carving.

With a sharp penknife pare off the wood until the back and side outlines are reached. Do not hurry over the carving at any stage and remove small chips only (about the size of pencil parings).

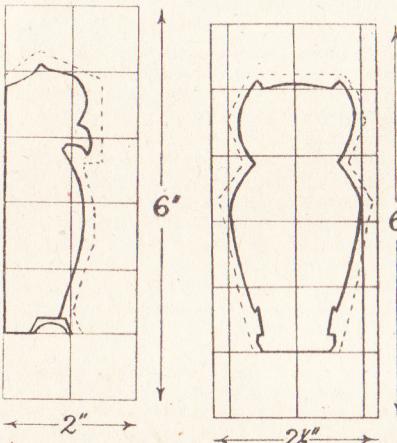
Next, rasp and file out the hollow beneath the feet to house the dowel rod. Test by placing the dowel in position now and again until a flush fit is obtained. Leave the detail of the claws until the rest of the owl is completed. Now round off the body with your penknife, and make grooves below the inside edges of the wings to bring them into relief.

The eye surrounds are flat and, as will be apparent from the sketches, swept back at an angle from the beak. Pare away slowly, taking especial care near the beak. The eyes may be made of brown or black glass beads fixed in small

sockets with waterproof cement, or round-headed copper rivets may be fixed in carefully drilled holes. If copper rivets are used, give them a dab of black high gloss enamel before you varnish the whole job later.

The Beak

To shape the beak, re-sharpen your penknife on the oilstone and take off tiny shavings. Do not be tempted to use a razor blade, as these, owing to their width, are difficult to control in small work such as this. Should you have the misfortune to spoil the beak, make another in scrap wood (preferably hardwood) and cement it into a recess made between the eyes. (Such a recess may be made by drilling holes and cleaning out a slot).



Figs. 1 and 2—How to mark out the owl

Finally, remove the wood from between the feet. A fine fretsaw will help here; saw towards the body, taking care not to mark it. A small chisel will now clean out the surplus. Carefully point the claws, then, holding the dowel in position to give support, cut the shallow grooves to indicate the toes.

The dowel should now be cut to its correct length, i.e., $2\frac{1}{2}$ ins. and glass-papered at both ends. As shown in Figs. 3 and 4, it is fixed firmly by two long thin countersunk screws. Such firm fixing is necessary because the dowel will be the part automatically held when knocking. The hinge (brass) may be let into the owl's head or merely screwed on direct.



Figs. 3 and 4—Side and front views of the knocker, showing the positions of hinge, striker and screws

The striker, as Fig. 3 indicates, is a roundheaded screw passed through a washer.

The back board, Fig. 5, is cut 3ins. by 6ins. and either chamfered or rounded at the edges. The hinge can be recessed or just screwed on as upon the owl's head. A small piece of brass serves for the striker plate, and is best recessed, so as not to throw the bottom of the owl forward too much.

Fixing the Back Board

This back board is fixed to the door by the same screws which fix hinge and striker plate. Hence screws long enough to pass right through the board must be used. This device neatens the whole job by keeping the fixing screws out of sight behind the owl.

In finishing the knocker, its rustic appearance is enhanced by staining all parts of the owl brown—except the eye surrounds and beak—with a solution of potassium permanganate or other stain, and then varnishing the whole bird and back board. A saturated solution of orange shellac in methylated spirit gives a good grounding and an ordinary clear varnish tops it up well. Finished thus, the knocker has a delightful warm gold tone and throws up the owl well. (395)

**Designs are given
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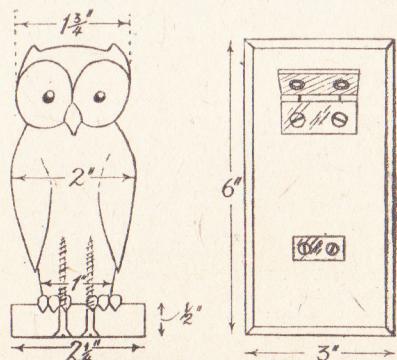


Fig. 5—Hinge and striker plate on back plate

For the 'tyro' come these TIMELY CAMPING HINTS

WITH the approach of warmer weather, many of us will be thinking of the pleasures of a holiday spent under canvas. For those contemplating their first camping venture, these hints should prove useful.

For camping, of course, the tent is the chief item of equipment. Probably you have one that has served well for some few seasons, but, as a result of standing up to all kinds of weather, dust and rain, is a trifle shabby. White tents show up the dirt worse than coloured ones.

Is it possible to wash a dirty tent? Yes, it can be done, but it is seldom worth all the trouble—it will soon get soiled again. Why not dye it, perhaps, a green or khaki colour? Then you will not have to worry so much about its becoming unsightly again. By the way, it is a good idea to dye the tent a shade darker than you really desire to have it, because it will soon fade out, and so give you the tint you prefer. Any good dye made for colouring cotton materials should serve.

Tent Proofing

Perhaps that old tent, though in pretty fair condition, needs re-proofing. There are several really good makes of waterproofing solutions now on the market, and these are easily applied with a suitable soft brush, if you spread out the tent on a flat surface.

In case you prefer to make your own solution, the following recipe is given:

Boil 1oz. isinglass in 1pt. of soft water until dissolved; strain through clean linen into a second saucepan. Dissolve 1oz. white Castile soap in 1pt. of water, strain, and add to first solution. Dissolve 1oz. alum in 2pts. of water, strain; add. Stir and heat the combined solution until it simmers. Spread out the tent on a flat surface, and work mixture into fabric, particularly the seams, with soft brush.

You can hire tents, but it is better to get your own, if you intend to go camping regularly. For a small party, a useful type is the 'gypsy' tent. The roof of this pattern slants down on either side until it is 2ft. from the ground, then falls straight. It will house two. A flysheet is recommended with this model.

For three or four, a good ridge tent of the 'cottage' type will serve. Its height is 6ft. 6ins., walls 3ft., length about 7ft. and width 6ft. 6ins. or 7ft. The cost is £10 to £12.

For a family party, a square type 'bell' tent about 10ft. square and 11ft. high, with 3ft. to 6ft. walls, is serviceable, as it provides plenty of head-room.

For the solo camper, the 'Itisa' pattern has the advantages of being light, and also easy and simple to erect. It has one pole and one guy-line only. Dimensions

are about 7ft. 6ins. wide, and 5ft. high. Whilst primarily intended for 'solo' camping, it will accommodate two chums at a pinch. Another useful type of small tent is the bivouac pattern.

Cooking

One of the most popular cooking stoves are the air pressure paraffin stoves which are made in several sizes. For hikers, cyclists and 'solo' campers generally, a pocket outfit is useful and easily carried. For permanent camping, a portable gas stove or large oil stove is recommended.

If using a pressure paraffin stove outdoors, it is advisable to have a draught shield, or you will have to build some sort of shelter for it. You will require a can for oil, and a smaller one for spirit (methylated).

Groundsheets and Bedding

Rubber groundsheets are the best, but rather more expensive than canvas or oilskin. But if sleeping 'on the turf', a really good waterproof groundsheet is most essential.

Campers need two blankets each—and warm, woolly ones are best. Sleeping-bags, kapok filled, beat everything for comfort and warmth, but are somewhat expensive. If you prefer luxury in camp, you can be comfy sleeping on an air bed. In a more or less permanent camp (summer) a low metal-framed camp bed, or the same thing in wood, is worth consideration.

The best fun for young fellows, however, is the simple, inexpensive sort of camping. One may have to 'rough it', and very often may have to improvise,

but that makes it all the more exciting. The complete outfit with no frills is as under.

For two persons:—

Bivouac tent; fly-sheet; groundsheets; blankets; small pressure stove; fry-pan; meta fuel (for stove); plates; two small saucepans; two mugs (unbreakable); tea infuser; knife, fork, spoon, each; jack-knife with tin opener; toilet requisites; small shoe brush; tooth-brush; two small towels; small first-aid compact; pyjamas and spare socks; a cape or lightweight macintosh. And, of course, pull-up bags for food, tea and so on.

The two chums divide the equipment equally between them, and whether they go on foot or on bicycles, they will be in for a good time—if they plan wisely.

Sites

Camping sites vary—from farm fields with no services for campers, to commercial camping grounds, fully equipped. Those who join the Camping Club (38 Grosvenor Gardens, London, S.W.1), get many facilities for camping, on sites scattered up and down the countryside, as well as other advantages. Whatever you do, never trespass on private ground. When in doubt, ask the local policeman or other reliable person in the nearest village. Farmers often give permission, or make a small charge per night.

No matter where you camp, always conform to the rules, written and unwritten; and never give farmers and landowners or other countryfolk cause to regret your presence. Good manners cost nothing. (209)

through reduction gearing from a motor which also actuates any automatic switching necessary for bulbs used in the model. The vehicles follow the magnets, which can be made to halt as required, by an automatic out-of-gear mechanism also worked by the motor.

Amplifying a Piano

Is it possible to amplify my piano on the lines of the electric organ or guitar, etc.? (B.R.L.—Newport).

THE only practical method would appear to be to use an ordinary microphone of good quality, near the piano, and to feed the output from this into an amplifier, which would drive suitable loudspeakers. If for use in a dance hall or some similar purpose, then a very powerful amplifier will be required, if the volume is to exceed that already provided by the piano itself. A 5-watt amplifier would be the minimum feasible, 12 to 15 watts output would be better, and a small Public Address amplifier would be suitable.

MISCELLANEOUS ADVERTISEMENTS

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(Continued foot of page 446)

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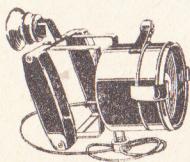
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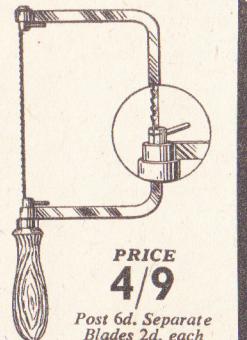
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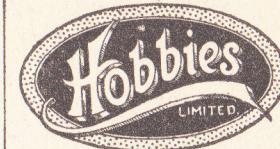
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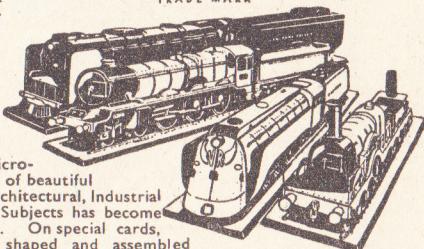
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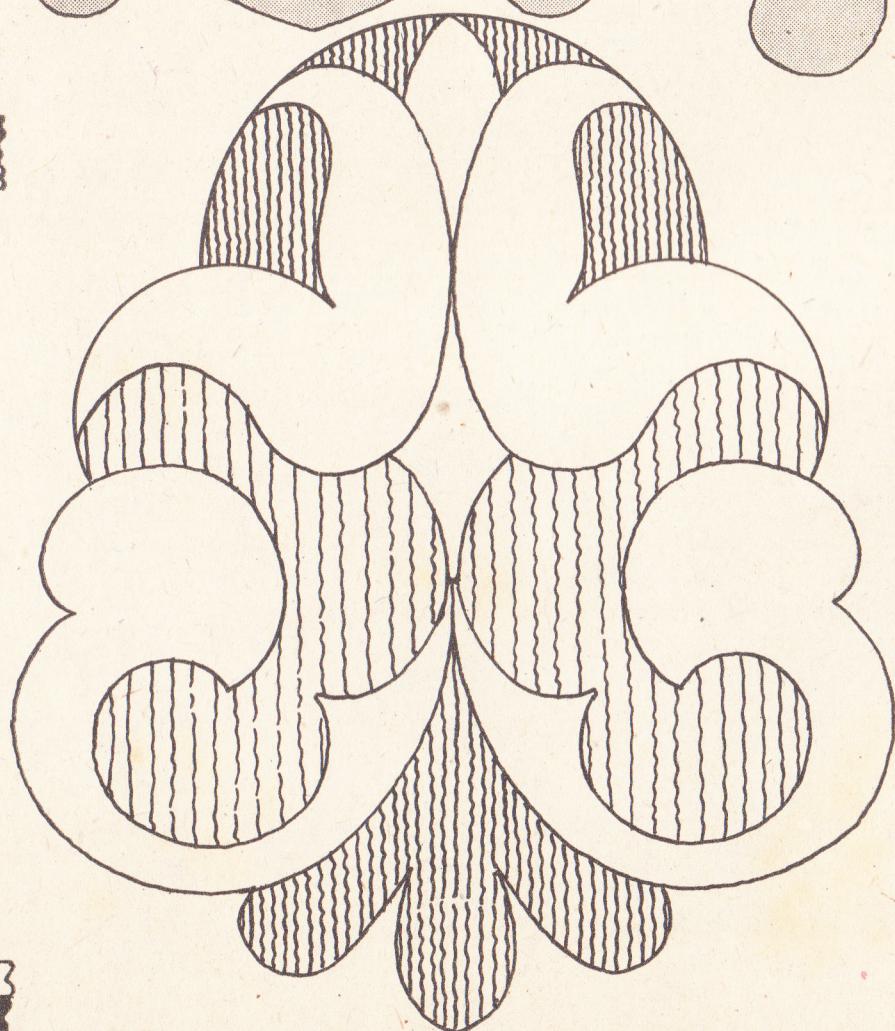
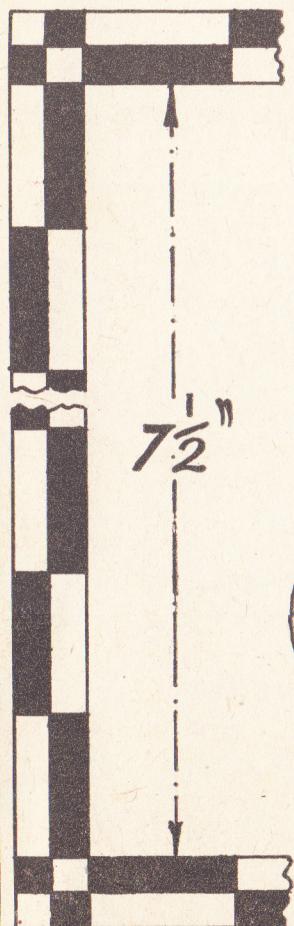
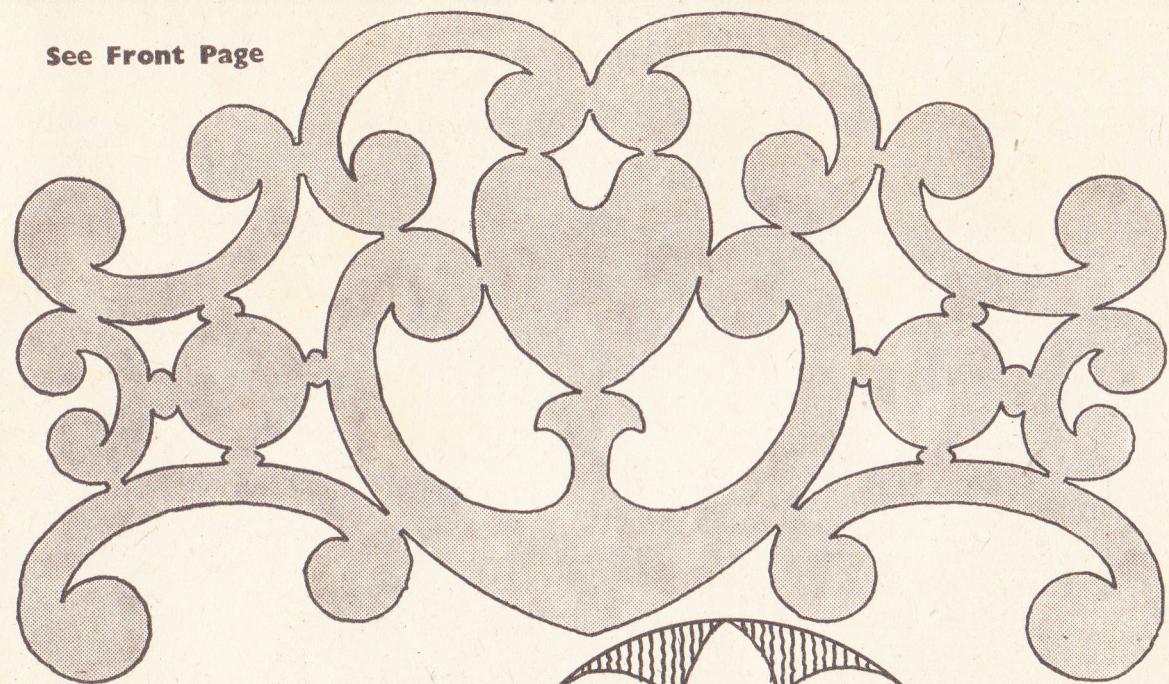
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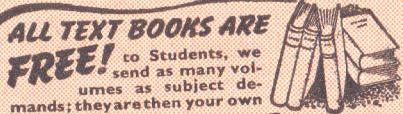
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All Commercial Subjects

Commercial Art

Common Prelim.

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Concrete and Structural Engineering

Diesel Engines

Draughtsmanship.

Electrical or Mechanical

Engineering. All branches. Subjects and Exams.

General Certificate of Education

Examinations

General Education

G.P.O. Eng. Dept.

Heating and Ventilating

Institute of Municipal Engineers

Journalism

Languages

Mathematics

Metallurgy

Mining. All Subjects

Mining, Electrical Engineering

Motor Engineering

Naval Architecture

Plastics

Play Writing

Plumbing

Police, Special Course

Preceptors, College of

Press Tool Work

Pumps and Pumping

Machinery

Quantity Surveying

Inst. of Quantity Surveyors Exams.

Radio Service Engineering

Radio (Short Wave)

Road Making and Maintenance

Salesmanship

Sanitation

School Attendance Officer

Secretarial Exams.

Sheet Metal Work

Shipbuilding

Shorthand(Pitman's)

Short Story Writing

Speaking in Public

Structural Engineering

Surveying (R.I.C.S. Exams.)

Teachers of Handicrafts

Telecommunications (City and Guilds)

Television

Transport Inst.

Examinations

Viewers, Gaugers Inspectors

Weights and Measures Inspectors

Wireless Telegraphy

and Telephony

Works Managers

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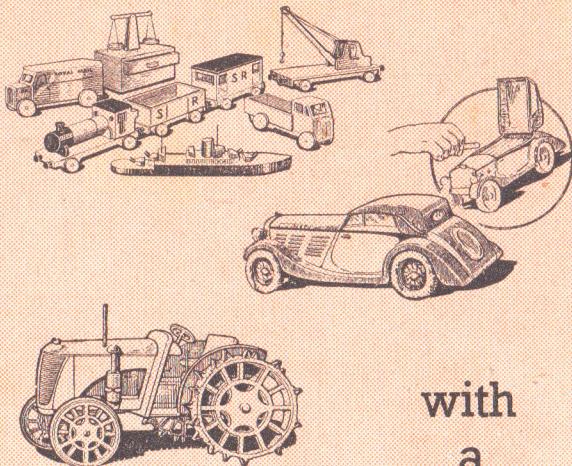
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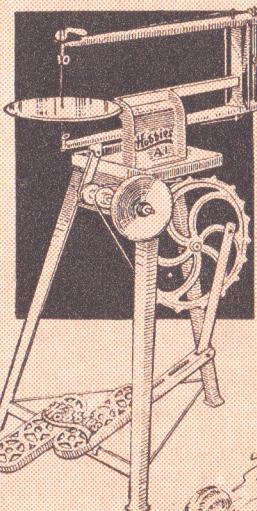
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